

TITLE OF THE INVENTION

Saturday, February 09, 2002

"THERMANGEL"

EXTERNAL BODY TEMPERATURE REGULATOR

Background of the Invention

This invention was designed on November 3, 2001. Its conception began over 5 years ago, while working as a nurse in a community hospital. I was taking care of a patient whose temperature had climbed to 104 degrees fahrenheit. The standard protocol for this patient was to apply ice packs to the groin and axilla. However, I decided to try a different approach and it worked beautifully. And this is how the invention began.

DESCRIPTION OF PRIOR ART

To describe the prior art of thermoregulation intervention is two part. I will describe how hyperthermia/hypothermia was previously treated as well as the closest cousin to this design.

Hyperthermia is a condition where the temperature is too high. This is commonly found in sepsis, a massive infection state where the body begins to shut down from the illness. Hyperthermia is also found in drug reactions, heatstroke, thyroid disorders, alcohol withdrawal and many other illnesses. It is commonly treated with tylenol, ice baths, cooling blankets and ice packs to the groin and axilla (underarms). These approaches are both problematic and costly, as well as ineffective for any length of time if at all. Usually, when someone is hyperthermic, they are critically ill or near death. It is for this reason that this patent needs an expedited review, as we have an aging population and soaring medical expenses, we need all of the cost-effective means of treating illness we can get.

Hypothermia is a condition where the temperature of the body is too low. This happens due to exposure of the elements, near drownings, and accidental exposures. The current techniques used to treat this condition are gastric lavage, which is heated water flushed through the stomach to heat the body. It is the idea to heat from the inside out as you would not want to send cold blood to the heart or brain as this increases the likelihood of mortality.

The closest designs I could find were used for other purposes. For example, the "Chillow" is a flat, thin product placed in between the pillow and the pillowcase to keep your pillowcase cool and to treat minor heat related problems such as sunburn and backaches. It is not designed for clinical use nor would it be able to affect a truly hyperthermic patient as it is not equipped for that degree of thermoregulation. Also, it was not designed with a diagnostic or clinical capacity in mind. There is also a product that heats from the palm of the hand. There are also various cooling devices used for coolers that are small, blue ice packs. You may have one in your home. My device is different in that it reduces or raises the body temperature and maintains it. You must be very careful in that you do not lower or

raise the temperature too much and that the achieved temperature is maintained.

SUMMARY OF THE INVENTION

The Thermangel is a thermoregulating unit that resembles a pillow. The patient lays on the pillow and is thermoregulated by lying on the pillow by way of cooling or heating the posterior portion of the neck, head and hairline. The pillow has three compartments with an insulative lining, gel layer and thermoregulatory layer. The pillow has an attached probe on the right or left side of the with an earplug or axillary probe to monitor the patient's temperature. There is also a cord attached to the apparatus that connects to the wall unit and interprets the patient response. Another cord then attaches to the electrical outlet for power supply. This display could also be directly on the unit or at a remote location for ease of monitoring. The wall unit displays the patients response such as vital signs, time of therapy, goal temperature, heart rate, respirations, and even alarm functions. In addition, a conducting substance could be applied to the patient to speed the thermocorrection process.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000



DETAILED DESCRIPTION OF THE DRAWINGS

The thermal medical device has a hollow outer insulative layer (figure 1a). Wool or any insulating substance or material has long been used for its insulative qualities for both heat and cold. The next layer (figure 2a) is an opening for the gel layer. The device and its subcomponents are all made of a vinyl polymer or similar thermoconductive material. The next layer (figure 3a) is composed of a thermoconductive material is filled with a substance to help radiate the heat or cold from the patient and is shaped to fit in the first layer with room left for the actual heating or cooling apparatus (figure 4a). The inner layer (figure 5a) is the compartment for the actual thermoregulatory apparatus, either ice, a cold pack or another cooling device (figure 6a). The heating thermoregulatory apparatus (figure 7a) may also be used in this compartment in the situation of hypothermia. There are various types of thermoregulatory devices which may be used for the heating process, such as heated water or any other heated substance. On the right or left side of the device is a cord (figure 8a) which connects to either the wall display unit (figure 9a) or attached digital display device (figure 10a). The wall display unit then has a power cord (figure 11a) which connects to a standard electrical outlet (figure 11b). In addition, you can also construct a remote monitoring apparatus (figure 12a) to see the patient progress. The display unit will show the patient's (figure 13a) temperature, and other pertinent data regarding the patient's condition such as heart rate, respirations, length of therapy time and change of temperature, as well as the desired temperature to be achieved. The temperature probe (figure 14a-b-c) could be either applied to the ear or axilla of the patient as well the forehead if clinical conditions warrant such use. The earprobe could be shaped like around the base of the ear or like an earplug. The

axillary probe could be a probe that is permanently placed for constant monitoring.

These devices would be constructed with a plastic material similar to those found in the market today. This allows for constant monitoring of the patient.